

Fanglei showed her cross check of last week's spin tracking results. It turned out that  $\Delta p/p$  was a fixed value for all particles in the tracking, not a Gaussian distribution. As a result, all particles have same momentum deviation (instead of spread) and act coherently. When using  $\Delta p/p = 0$  or a true Gaussian distribution, the oscillation structure disappeared. So the conclusion is that the SPINK code is fine. She will redo those tracking with proper longitudinal distribution.

Alfredo presented his work on coping SPINK simulation code with the modified spin motion equation. Ernest presented before that it is important to define  $B_{perp}$  and  $B_{parallel}$  along the particle trajectory, and the reference frame for this definition is in the instantaneous moving frame. For the SPINK, the reference frame was defined as the lab frame. For every element in the lattice, the tracking code gives the coordinates and velocity of a particle. Alfredo presented the steps (approximations) he has to make to describe the spin motion in the lab frame. First the spin tracking is based on thin lens approximation. Alfredo pointed out that the orbit is usually bent either in the dipole or quadrupole. There is always a difference for the orbit at the entrance and exit of a magnet. He added a rotation matrix to take this rotation into account, which effectively changed the coordinate system along the particle trajectory but it is still described in the lab frame. Waldo pointed out that the rotation matrix is not unitary, which is a serious problem. The Taylor series expansion approximation is also in question when  $G\gamma\theta$  is not small (e.g. in RHIC). Another question Waldo raised is if the derivation requires B field is transverse to the orbit all the time. With all these approximations, Alfredo derived factor  $G\gamma$  instead of  $1 + G\gamma$ , similar to Ernest results.

Kevin presented further results on horizontal resonance strength reduction by manipulating  $\gamma_x$  with 17th harmonics correctors in the AGS. The results show that with  $\nu_x < 8.5$ , one can get  $\gamma_x$  reduction at entrance of the cold snake but not when  $\nu_x > 8.5$ .  $\nu_x$  stays below 8.5 actually avoids the sum resonance but a less harmful difference resonance may still exist. Woody asked why the horizontal tune has to be below 8.5, instead of being symmetric around 8.5. Thomas and Kevin commented that the AGS beta function is already distorted from bare machine (no tune quads) before the correction quads on, due to tune quads and high vertical tune.

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